

## Training in the Biology of Human Embryonic Stem Cells and Emerging Technologies II

### Grant Award Details

Training in the Biology of Human Embryonic Stem Cells and Emerging Technologies II

**Grant Type:** Research Training II

**Grant Number:** TG2-01158

**Project Objective:** This program at the Salk Institute supports training of postdoctoral fellows by providing research opportunities, coursework, seminars, conference attendance, and outreach activities. The specific focus of this program is human stem cell biology.

**Investigator:**

|                     |                                       |
|---------------------|---------------------------------------|
| <b>Name:</b>        | Juan Carlos Izpisua Belmonte          |
| <b>Institution:</b> | Salk Institute for Biological Studies |
| <b>Type:</b>        | PI                                    |

**Award Value:** \$2,886,221

**Status:** Closed

### Progress Reports

**Reporting Period:** Year 4

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**Reporting Period:** Year 5

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**Reporting Period:** Year 6

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**Reporting Period:** Year 7/NCE

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## Grant Application Details

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**Application Title:** Training in the Biology of Human Embryonic Stem Cells and Emerging Technologies II

**Public Abstract:** Stem cells are the primitive cells that give rise to the different tissue types in the body. In a way, stem cells are the universal cells from which all cells are derived. Their unlimited proliferation and differentiation potential raises the prospect that stem cells could be used as therapeutic tools offering hope for millions who suffer from debilitating diseases and conditions for which there are limited or no treatments including: neurological disease, cardiovascular disease, autoimmune diseases, diabetes, and osteoporosis. Furthermore, stem cells may serve as diagnostic tools, cancer perhaps being one of the most promising areas. But before these potential applications become a reality, scientists need to be educated and trained so to have a better understanding of the mechanisms by which human embryonic stem cells renew themselves indefinitely as well as the cellular and molecular mechanisms that control their differentiation to the different type of cells and tissues of the human body. This Training program is designed to develop and enhance research opportunities for postdoctoral fellows training for careers in the field of human stem cell biology. Our goals are to develop a curriculum of study and research experiences necessary to provide high quality research training and to ensure a continuing supply of well-trained scientists prepared to conduct cutting-edge health-related research in human embryonic stem cell biology. Training in research has been a key activity of the applicant institute since its inception, reflected in the fact that many of the more than 2,000 scientists trained at the Institute have gone on to positions of leadership in other prominent research centers worldwide, including five Nobel prizes. This proposal aims to continue this record of achievement by capitalizing on the multi-disciplinary range of conceptual and methodological expertise present at the applicant institute in the stem cell biomedical field.

**Statement of Benefit to California:** Neurological and cardiovascular disorders, autoimmune diseases, diabetes, cancer and osteoporosis strike no less than 10 million Californians each year, causing an incalculable personal toll and an annual economic cost of billions of dollars in medical expenses and lost productivity. Stem cells are the primitive cells that give rise to the different tissue types in the body. In a way, stem cells are the universal cells from which all cells are derived. Their unlimited proliferation and differentiation potential raises the prospect that stem cells could be used as therapeutic tools offering hope for millions of Californians who suffer from debilitating diseases and conditions for which there are limited or no treatments. But before these potential applications become a reality, scientists need to be educated and trained so to have a better understanding of the mechanisms by which human embryonic stem cells renew themselves indefinitely as well as the cellular and molecular mechanisms that control their differentiation to the different type of cells and tissues of the human body. In this proposal we aim to provide a high quality research training and to ensure a continuing supply of well-trained scientists prepared to conduct cutting-edge health-related research in human embryonic stem cell biology. A key benefit derived from this Training grant proposal is the training of new scientists to serve as educators and researchers for the future, many in the burgeoning area of stem cell biology for which the State of California has emerged as a world's leader. Furthermore, and as a result of their research activities, specific tools and methods for reducing medical costs and increasing the quality of life and level of productivity of afflicted Californians might be generated. Finally, the discoveries derived from innovative and multidisciplinary research on hES cells by the trained scientists are likely to lead to important new areas of intellectual property that are essential for creating high quality jobs in the biotechnology and pharmaceutical industries in California.